Representing and exploring summer distribution patterns of Southern Resident killer whales *(Orcinus orca)*

Donna D. Hauser, Washington Cooperative Fish and Wildlife Research Unit, School of Aquatic and Fishery Sciences, University of Washington*
Miles L. Logsdon, School of Oceanography, University of Washington
Elizabeth E. Holmes, Northwest Fisheries Science Center, National Marine Fisheries Service
Glenn R. VanBlaricom, Washington Cooperative Fish & Wildlife Research Unit, School of Fisheries and Aquatic Sciences, University of Washington
Richard W. Osborne, The Whale Museum

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Southern Resident killer whales (SRKW) are prominent cultural and ecological symbols in the Pacific Northwest. Recent population declines have led to various conservation listings in Canada, the United States, and Washington State. Extensive, long-term (> 25 years) demographic studies provide background for conservation planning, yet little is known about the changing patterns in spatial behavior of this population. Our goals are to: (1) identify an effective scale for representation of SRKW locations; and (2) use the results from the previous objective to explore variation in spatial distribution of the SRKW pods. To achieve these goals, we used data compiled by the Whale Museum in Friday Harbor, WA and quantify distribution patterns of SRKW pods at broad social and temporal scales. Our results identify the effects of search radius and grid size in representing SRKW distribution patterns. We conclude that parameter estimation is vital to the accurate description and interpretation of spatial data. We also describe spatial variation in distribution among SRKW pods at a broad temporal scale and highlight distinct patterns among pods within the study area. Implications for SRKW conservation planning, application of spatial pattern representation methods, and future research are discussed.